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EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/024,000	SUZUKI, HIROYUKI	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 2-7, filed 07 March 2006, with respect to the rejections of claims 1, 8 and 14 under 35 USC §102(b) have been fully considered and are persuasive.

Applicant argues that Fujiwara (US Patent 4,813,078) does not disclose or mention halftone dot characteristics or halftone dot characteristic counting, nor discrimination based on the counting of halftone dot characteristics.

Examiner has reconsidered the Fujiwara reference and found Applicant's arguments convincing. Therefore, the rejection has been withdrawn.

However, upon further consideration, new grounds of rejection are made in view of newly discovered prior art references.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (US Patent 4,813,078) in view of Semasa (US Patent 5,291,309).

Regarding claim 1: Fujiwara discloses an image processing apparatus (figure 1 of Fujiwara) comprising a binary dot characteristic sampling section (figure 1(3) and column 4, lines 57-65 of Fujiwara) that samples a binary dot characteristic indicative of a characteristic of a binary dot based on image data (column 4, line 65 to column 5, line 6 of Fujiwara); a first counter (figure 1(7) of Fujiwara) that counts the number of binary dot characteristics that exist in a first region (figure 7a and figure 7b of Fujiwara) including a target pixel from among binary dot characteristics sampled by the binary dot characteristic sampling section (figures 10a-10b and column 6, lines 29-41 of Fujiwara); an edge pixel sampling section (figure 1(4) of Fujiwara) that samples a pixel belonging to an edge region based on image data (figure 2c and column 4, lines 54-65 of Fujiwara); a second counter (figure 1(5) of Fujiwara) that counts the number of edge pixels that exist in a second region (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) including a target pixel from among edge pixels sampled by the edge pixel sampling section (column 6, lines 6-14 of Fujiwara); and a discriminator (figure 1(8) and column 6, lines 48-54 of Fujiwara) that discriminates whether or not the target pixel belongs to a character region in a binary dot image based on the count result of the first counter and the count result of the second counter (column 6, line 60 to column 7, line 6 of Fujiwara).

Fujiwara does not disclose expressly a halftone dot characteristic sampling section that samples a halftone dot character-

istic indicative of a characteristic of a halftone dot based on image data; that said first counter counts the number of halftone dot characteristics that exist in a first region including a target pixel from among halftone dot characteristics sampled by the halftone dot characteristic sampling section; and that said discriminator discriminates whether or not said target pixel belongs to a character region in a *halftone* dot image.

Semasa discloses a halftone dot characteristic sampling section (figure 1a(3g) of Semasa) that samples a halftone dot characteristic indicative of a characteristic of a halftone dot based on image data (column 5, lines 7-13 of Semasa); and a first counter (figure 1b(4) of Semasa) that counts the number of halftone dot characteristics that exist in a first region including a target pixel (darkened pixel shown in figure 1a(3f) of Semasa) from among halftone dot characteristics sampled by the halftone dot characteristic sampling section (column 5, lines 47-57 of Semasa).

Fujiwara and Semasa are combinable because they are from the same field of endeavor, namely separation of image data into various regions based on the type of image data within said regions. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply halftone dot characteristic sampling and counting, as taught by Semasa, rather than simple binary dot characteristic sampling and counting, as taught by Fujiwara. This also results, by combination, in said discriminator discriminating whether or not said target pixel belongs to a character region in a halftone dot image. The motivation for doing so would have been that applying the teachings of Semasa provide for greater capabilities of image processing. Instead of operating merely on

binary data, as taught by Fujiwara, the system according to the combination of Fujiwara in view of Semasa will be able to operate on halftone data and continuous-tone data, which is clearly an improvement in functionality. Therefore, it would have been obvious to combine Semasa with Fujiwara to obtain the invention as specified in claim 1.

Regarding claim 2: Fujiwara discloses that the edge pixel sampling section contains an edge detector that detects an edge quantity and samples an internal edge pixel such that a positive edge detection quantity has been detected by the edge detector (figure 2c; figure 6; column 5, lines 56-59; and column 6, lines 3-11 of Fujiwara).

Regarding claim 3: Fujiwara discloses that the discriminator discriminates that a target pixel belongs to a character region in a binary dot image in the case that the count value of the first counter is smaller than a first threshold (figures 10a-10b and column 6, lines 35-48 of Fujiwara) and the count value of the second counter is greater than a second threshold (figure 6 and column 6, lines 6-14 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image taught by Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 4: Fujiwara discloses a continuity detecting section that detects whether or not an edge has continuity (figure 6 and column 5, lines 17-21 of Fujiwara), wherein the discriminator discriminates whether or not the target pixel belongs to a character region in a binary dot image taking into consideration a detection result of the continuity detecting section (column 4, lines 24-27 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image taught by

Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 5: Fujiwara discloses including a correction unit that corrects image data based on a discrimination result of the discriminator (column 6, lines 49-55 of Fujiwara). By displaying the recognized character stored in the character dictionary (column 6, lines 49-55 of Fujiwara), the image data is corrected accordingly, since the proper character is displayed rather than the imprecisely drawn character that was recognized as a character in said character dictionary.

Regarding claim 6: Fujiwara discloses that the binary dot characteristic sampling section contains a filter (figure 2b of Fujiwara) that detects isolate points as binary dot characteristics (column 4, lines 57-65 of Fujiwara). A single, and thus isolated, picture element can be considered a boundary point, and thus in a character region (figure 2c of Fujiwara), based on the results of the filter shown in figure 2b of Fujiwara (column 4, lines 57-65 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image taught by Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 7: Fujiwara discloses that the number of pixels in the first region (figure 7a of Fujiwara) is greater than the number of pixels in the second region (e.g., figure 8a (F) of Fujiwara). Clearly, an entire image is larger than one of a plurality of sub-regions of the same image.

Regarding claim 8: Fujiwara discloses an image processing apparatus (figure 1 of Fujiwara) comprising a first discrimination unit (figure 1(6) of Fujiwara) that discriminates whether or not each pixel of the image data is a binary dot characteris-

tic indicative of a characteristic of a binary dot image (column 6, lines 22-30 of Fujiwara) by using a first filter (figures 2b-2c; figure 6; and column 6, lines 29-36 of Fujiwara). The first filter is the discrimination between back-ground portions, character portions, and picture element string numbers shown in figure 6 of Fujiwara (column 6,lines 29-36 of Fujiwara).

Fujiwara further discloses a second discrimination unit (figure 1(4) of Fujiwara) that discriminates whether or not each pixel of image data is a pixel that belongs to an edge region (figure 2c and column 4, lines 54-65 of Fujiwara) by using a second filter (figures 2a-2c of Fujiwara); a first counter (figure 1(7) of Fujiwara) that counts the number of binary dot characteristics that exist in a first pixel matrix (figure 7a and figure 7b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result of the first discrimination unit (figures 10a-10b and column 6, lines 29-41 of Fujiwara); a second counter (figure 1(5) of Fujiwara) that counts the number of edge pixels that exist in a second pixel matrix (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result of the second discrimination unit (column 6, lines 6-14 of Fujiwara); a discrimination unit (figure 1(8) and column 6, lines 48-54 of Fujiwara) that discriminates whether or not a target pixel belongs to a character region in a binary dot image based on the count result of the first counter and the count result of the second counter (column 6, line 60 to column 7, line 6 of Fujiwara); and an image processing unit (figure 1(10) of Fujiwara) that processes image

data based on the discrimination result of the discrimination unit (column 6, lines 49-55 of Fujiwara).

Fujiwara does not disclose expressly a first discrimination unit that discriminates whether or not each pixel of image data is a halftone dot characteristic indicative of a characteristic of a halftone dot image by using a first filter; that said first counter counts the number of halftone dot characteristics that exist in a first pixel matrix consisting of a plurality of pixels containing a target pixel based on the discrimination result of the first discrimination unit; and that said discrimination unit discriminates whether or not said target pixel belongs to a character region in a *halftone* dot image.

Semasa discloses a first discrimination unit (figure 1a(3g) of Semasa) that discriminates whether or not each pixel of image data is a halftone dot characteristic indicative of a characteristic of a halftone dot image by using a first filter (column 5, lines 7-19 of Semasa); and a first counter (figure 1b(4) of Semasa) that counts the number of halftone dot characteristics that exist in a first pixel matrix consisting of a plurality of pixels (figure 1a(3f) of Semasa) containing a target pixel (darkened pixel shown in figure 1a(3f) of Semasa) based on the discrimination result of the first discrimination unit (column 5, lines 47-57 of Semasa).

Fujiwara and Semasa are combinable because they are from the same field of endeavor, namely separation of image data into various regions based on the type of image data within said regions. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply halftone dot characteristic sampling and counting, as taught by Semasa, rather than simple binary dot characteristic sampling

and counting, as taught by Fujiwara. This also results, by combination, in said discrimination unit discriminating whether or not said target pixel belongs to a character region in a halftone dot image. The motivation for doing so would have been that applying the teachings of Semasa provide for greater capabilities of image processing. Instead of operating merely on binary data, as taught by Fujiwara, the system according to the combination of Fujiwara in view of Semasa will be able to operate on halftone data and continuous-tone data, which is clearly an improvement in functionality. Therefore, it would have been obvious to combine Semasa with Fujiwara to obtain the invention as specified in claim 8.

Regarding claim 10: Fujiwara discloses that the discrimination unit discriminates that a target pixel belongs to a character region in a binary dot image in the case that a count value of the first counter is smaller than a first threshold (figures 10a-10b and column 6, lines 35-48 of Fujiwara) and a count value of the second counter is greater than a second threshold (figure 6 and column 6, lines 6-14 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image taught by Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 11: Fujiwara discloses a continuity detecting section that detects whether or not an edge has continuity (figure 6 and column 5, lines 17-21 of Fujiwara), wherein the discrimination unit discriminates whether or not the target pixel belongs to a character region in a binary dot image taking into consideration a detection result of the continuity detecting section (column 4, lines 24-27 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image

taught by Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 12: Fujiwara discloses that the first filter (figure 2b of Fujiwara) detects isolate points, and the first discrimination unit detects the isolation points as binary dot characteristics (column 4, lines 57-65 of Fujiwara). A single, and thus isolated, picture element can be considered a boundary point, and thus in a character region (figure 2c of Fujiwara), based on the results of the filter shown in figure 2b of Fujiwara (column 4, lines 57-65 of Fujiwara). As set forth in the arguments regarding claim 1, the binary dot image taught by Fujiwara is a halftone dot image *as per* the teachings of Fujiwara in view of Semasa.

Regarding claim 13: Fujiwara discloses that the first pixel matrix (figure 7a of Fujiwara) is larger than the second pixel matrix (e.g., figure 8a(F) of Fujiwara). Clearly, an entire image is larger than one of a plurality of sub-regions of the same image.

Regarding claim 14: Fujiwara discloses a step 1 of discriminating whether or not each pixel of the image data is a binary dot characteristic indicative of a characteristic of a binary dot image (column 6, lines 22-30 of Fujiwara) and discriminating whether or not each pixel of image data is an edge pixel that belongs to an edge region (figure 2c and column 4, lines 54-65 of Fujiwara); a step 2 of counting the number of binary dot characteristics that exist in a first pixel matrix (figure 7a and figure 7b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result in the step 1 (figures 10a-10b and column 6, lines 29-41 of Fujiwara) and counting the number of edge pixels that exist in a

second pixel matrix (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) consisting of a plurality of pixels containing a target pixel; a step 3 of discriminating whether or not a target pixel belongs to a character region in a binary dot image based on the number of halftone dot characteristics and the number of edge pixels counted in step 2 (column 6, line 60 to column 7, line 6 of Fujiwara); and a step 4 of processing image data based on the discrimination result in the step 3 (column 6, lines 49-55 of Fujiwara).

Fujiwara does not disclose expressly discriminating whether or not each pixel of image data is a halftone dot characteristic indicative of a characteristic of a halftone dot image; counting the number of halftone dot characteristics that exist in a first pixel matrix consisting of a plurality of pixels containing a target pixel based on the discrimination result in said discriminating step; and that said discriminating in step 3 discriminates whether or not said target pixel belongs to a character region in a *halftone* dot image.

Semasa discloses discriminating whether or not each pixel of image data is a halftone dot characteristic indicative of a characteristic of a halftone dot image (column 5, lines 7-19 of Semasa); and counting the number of halftone dot characteristics that exist in a first pixel matrix consisting of a plurality of pixels (figure 1a(3f) of Semasa) containing a target pixel (darkened pixel shown in figure 1a(3f) of Semasa) based on the discrimination result in said discriminating step (column 5, lines 47-57 of Semasa).

Fujiwara and Semasa are combinable because they are from the same field of endeavor, namely separation of image data into

various regions based on the type of image data within said regions. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply halftone dot characteristic sampling and counting, as taught by Semasa, rather than simple binary dot characteristic sampling and counting, as taught by Fujiwara. This also results, by combination, in said discriminating in step 3 discriminates whether or not said target pixel belongs to a character region in a halftone dot image. The motivation for doing so would have been that applying the teachings of Semasa provide for greater capabilities of image processing. Instead of operating merely on binary data, as taught by Fujiwara, the method according to the combination of Fujiwara in view of Semasa will be able to operate on halftone data and continuous-tone data, which is clearly an improvement in functionality. Therefore, it would have been obvious to combine Semasa with Fujiwara to obtain the invention as specified in claim 14.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (US Patent 4,813,078) in view of Semasa (US Patent 5,291,309) and Matsukubo (US Patent 6,504,949 B2).

Regarding claim 9: Fujiwara in view of Semasa does not disclose expressly that the second discrimination unit contains a discriminator that discriminates whether an edge region is an internal edge region or an external edge region, and pixels in an edge region the discriminator has discriminated as an internal edge region are discriminated as edge pixels.

Matsukubo discloses discriminating whether an edge region (figure 29E and figure 30E of Matsukubo) is an internal edge

region (figure 29E(right-side curve of black pixels) and figure 30E(inside border lines of "A" character) of Matsukubo) or an external edge region (figure 29E(left-side curve of black pixels) and figure 30E(outside border lines of "A" character) of Matsukubo), and pixels in an edge region that has been discriminated as an internal edge region are discriminated as edge pixels (column 14, lines 46-54 of Matsukubo).

Fujiwara in view of Semasa is combinable with Matsukubo because they are from the same field of endeavor, namely the recognition and processing of characters in digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically determine and discriminate between internal and external edge pixels, as taught by Matsukubo. The suggestion for doing so would have been that specifying internal edge pixels will better define the character, especially characters with interior shapes, such an "A" or "R". Therefore, it would have been obvious to combine Matsukubo with Fujiwara in view of Semasa to obtain the invention as specified in claim 9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Technology Division 2625

17 May 2006

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